

From the
INTERNATIONAL SEARCHING AUTHORITY

To:

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PCT

WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY
(PCT Rule 43bis.1)

Date of mailing
(day/month/year) see form PCT/ISA/210 (second sheet)

Applicant's or agent's file reference
see form PCT/ISA/220

FOR FURTHER ACTION
See paragraph 2 below

International application No.
PCT/EP2005/050737

International filing date (day/month/year)
21.02.2005

Priority date (day/month/year)
02.03.2004

International Patent Classification (IPC) or both national classification and IPC
H02M3/28

Applicant
STMICROELECTRONICS S.R.L.

1. This opinion contains indications relating to the following items:

- ☒ Box No. I Basis of the opinion
- ☐ Box No. II Priority
- ☐ Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- ☐ Box No. IV Lack of unity of invention
- ☒ Box No. V Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- ☐ Box No. VI Certain documents cited
- ☐ Box No. VII Certain defects in the international application
- ☐ Box No. VIII Certain observations on the international application

2. **FURTHER ACTION**

If a demand for international preliminary examination is made, this opinion will usually be considered to be a written opinion of the International Preliminary Examining Authority ("IPEA"). However, this does not apply where the applicant chooses an Authority other than this one to be the IPEA and the chosen IPEA has notified the International Bureau under Rule 66.1bis(b) that written opinions of this International Searching Authority will not be so considered.

If this opinion is, as provided above, considered to be a written opinion of the IPEA, the applicant is invited to submit to the IPEA a written reply together, where appropriate, with amendments, before the expiration of three months from the date of mailing of Form PCT/ISA/220 or before the expiration of 22 months from the priority date, whichever expires later.

For further options, see Form PCT/ISA/220.

3. For further details, see notes to Form PCT/ISA/220.

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**WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY**International application No.
PCT/EP2005/050737

Box No. I Basis of the opinion

1. With regard to the **language**, this opinion has been established on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item.
☐ This opinion has been established on the basis of a translation from the original language into the following language , which is the language of a translation furnished for the purposes of international search (under Rules 12.3 and 23.1(b)).
2. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application and necessary to the claimed invention, this opinion has been established on the basis of:
 - a. type of material:
☐ a sequence listing
☐ table(s) related to the sequence listing
 - b. format of material:
☐ in written format
☐ in computer readable form
 - c. time of filing/furnishing:
☐ contained in the international application as filed.
☐ filed together with the international application in computer readable form.
☐ furnished subsequently to this Authority for the purposes of search.
3. ☐ In addition, in the case that more than one version or copy of a sequence listing and/or table relating thereto has been filed or furnished, the required statements that the information in the subsequent or additional copies is identical to that in the application as filed or does not go beyond the application as filed, as appropriate, were furnished.
4. Additional comments:

**WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY**International application No.
PCT/EP2005/050737

Box No. V Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Yes: Claims	1-8
	No: Claims	
Inventive step (IS)	Yes: Claims	5
	No: Claims	1-4, 6-8
Industrial applicability (IA)	Yes: Claims	1-8
	No: Claims	

2. Citations and explanations**see separate sheet**

**WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING
AUTHORITY (SEPARATE SHEET)**

PCT/EP2005/050737

Re Item V.

Reference is made to the following documents:

D1 : DE 195 37 876 A1 (NIPPONDENSO CO., LTD., KARIYA, AICHI, JP) 18 April 1996 (1996-04-18)

D2 : EP 0 605 752 A (YOKOGAWA ELECTRIC CORPORATION) 13 July 1994 (1994-07-13)

INDEPENDENT CLAIM 1 and CLAIM 8

1 The present application does not meet the criteria of Article 33(1) PCT, because the subject matter of claim 1 does not involve an inventive step in the sense of Article 33(3)PCT.

1.1 Document D1, which is considered to represent the most relevant state of the art to the subject matter of claim 1, discloses a circuit to reduce the variations of the auto-supply voltage (V_{cc}) of a control circuit (10) of a switching power supply where said control circuit supplies an activation or deactivation signal for a power transistor (9) comprising: a generator (23) of said auto-supply voltage; a controlled switch (46) capable of selectively connecting said generator to said control circuit (12); and a driving circuit (45, 44) of said controlled switch that supplies a closing signal of said controlled switch (column 5, line 44-53).

1.1.1 The subject-matter of independent claim 1 differs from the disclosure of D1 in that:
- the closing signal is supplied after a predefined time delay starting from said deactivation command.

1.1.2 The problem to be solved by the present invention may therefore be regarded as:
- to reduce losses of the drive circuit (45, 44) of the auxiliary switch (46) of document D1.

**WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING
AUTHORITY (SEPARATE SHEET)**

International application No.

PCT/EP2005/050737

1.1.3 Document D2 shows in a forward converter (fig. 3) which generates an auxiliary output voltage an efficient drive circuit for the auxiliary switch (Q2) which consists in a delay circuit (11) to turn on the auxiliary switch (Q2) after a predefined time delay starting from the activation command of the main power transistor (Q1) (see fig. 5(1), fig. 5(5)). It's clear for the man skilled in the art that, in the case of a flyback converter as in D1, the delay circuit should supply the closing signal to the auxiliary switch after a predefined time delay starting from the deactivation command to the main power transistor and not from the activation command.

By applying these explicit and implicit teachings of D2 to the flyback converter of D1 the skilled person would achieve the subject matter of claim 1, without exercise of any inventive skills in order to solve the problem posed. The proposed solution in independent claim 1 thus cannot be considered inventive (Article 33(3) PCT).

1.2 The same reasoning applies mutatis mutandis to subject-matter of relative method claim 8, which can not be considered inventive (Article 33(2) PCT) in view of D1 and D2.

DEPENDENT CLAIMS 2-4, 6, 7

2 Dependent claims 2-4, 6, 7 do not contain any features which, in combination with the features of any claim to which they refer, meet the requirements of the PCT in respect of novelty and/or inventive step (Article 33(2) and (3) PCT).

DEPENDENT CLAIM 5

3 Dependent claim 5 appears to meet the requirements of the PCT in respect of novelty and inventive step (Article 33(2) and (3) PCT) in view of prior art D1 and D2.

4 INDUSTRIAL APPLICABILITY

The present circuit of claim 1 and the method of claim 8 find application in switched mode power supplies, therefore the industrial applicability of such claims is beyond any doubt, meeting the requirements of Article 33(4) PCT.

Since remaining claims are all dependent on claim 1, they also meet the requirements of

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INTERNATIONAL SEARCHING
AUTHORITY (SEPARATE SHEET)**

International application No.

PCT/EP2005/050737

Article 33(4) PCT.